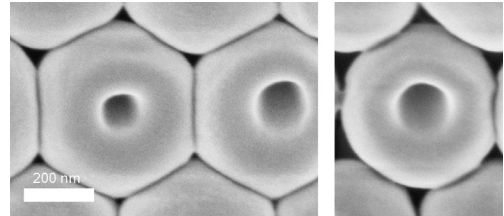


Focused Ion Beam milling of nano-boxes in self-assembled opal photonic crystals

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Point defects in 3D photonic crystals are of great interest due to their ability to act as a cavity that localizes photons. Since the mode volume of such a cavity is predicted to be smaller than a wavelength cubed, they are called nano-boxes.

We present a method to fabricate controlled point defects in self-assembled opal photonic crystals. The defects are milled with a focused ion beam at the surface of an opal, see figure, and then buried by additional crystal layers. We can control the size and shape of the defects by changing the milling parameters. We will discuss a route to obtain cavities in inverse opals, using our new results.



SEM picture of defects milled with a FIB. The scale bar equals 200 nm.